Teacher Information
Hurricanes

I. Objectives

A. Forming Concepts (Introductory) Objectives

1. Define hurricane.
2. Describe the Saffir-Simpson scale of hurricane intensity.
3. Describe how hurricanes form.
4. Describe the three things that favor hurricane intensification.
5. Write what time of year most hurricanes form.
6. Explain where most hurricanes occur.
7. Explain what storm tide is and how it occurs.
8. Describe the effects of storm tide.
9. Describe a hurricane in terms of vertical and horizontal size, wind speed, and duration.

B. Interpreting Data Objectives

1. Graph wind speed vs. storm tide data.
2. Graph storm tide vs. pressure data.
3. Graph wind speed vs. pressure data.
4. Convert millibars to inches of mercury and miles per hour to kilometers per hour to knots.
5. Trace the track of an Atlantic or Pacific hurricane on a tracking chart.

C. Applying Principles Objectives

1. Given pressure readings, the students will use the graphs they made from the hurricane data to determine the wind speed of selected real and fictitious hurricanes.
2. Given wind speed readings, the students will use the graphs they made from the hurricane data to determine the storm tides of selected real and fictitious hurricanes
3. Determine what difference the timing of the tide makes on the damage done by a hurricane.
4. Hypothesize what would happen if a hurricane with an intensity of 3 on the Saffir-Simpson Scale hit locally.

II. Interdisciplinary Uses

A. Social Studies

1. Describe geographic areas most affected by hurricanes.
2. Calculate economic effects in areas hit by hurricanes of different intensities.

B. Math

1. Graph numerical data.
2. Convert numerical values to different units.

C. Language Arts

1. Write a newspaper article describing the danger of hurricane storm tide. Include your graphs in the article. In your article, explain what the graphed data means for those who cannot interpret the graphs themselves. Include the Saffir-Simpson Scale.

III. Science Standards Coordination

The Hurricanes activity has been designed to incorporate science standards as specified by the National Science Education Standards (NSES) and the National Science Teachers Association (NSTA) Scope, Sequence, and Coordination (SS&C) of Secondary School Science. Only the major topics are listed. For Further explanation of each standard see the complete documents:

NSES-National Academy Press, 2101 Constitution Ave, NW, Washington, DC 20481
NSTA - 1840 Wilson Blvd, Arlington, VA 22201-3000

NSES	SS&C
structure of earth systems	water cycle
earth in the solar system	precipitation
transfer of energy	wind
understanding about science and tech	sun as an energy source
science and technology in society	water

IV. Advanced Preparation

A. Preteaching

Advanced preparation in class is required for the students to properly graph the relationships in the graphs. The concept of a "best fit" line must be introduced before the students try to draw a line showing relationships between any two sets of data. None of the graphs show a perfectly linear relationship. All graphs use a "best fit" line. See the teacher key for clarification of a "best fit" line.

B. Materials

1. One computer per three or four students
2. One copy of the student activity book for each student or group of students

C. Time required to complete the activity

All times were approximated using a 14.4 kbs modem.

1. The activity takes no more than one and one half hours of computer time.
2. The Get Info section takes about 20 - 30 minutes.
3. The Gather Data section takes about 25 - 30 minutes.
4. The Applying Principles section takes about takes about 10 minutes.

D. Teacher Familiarity with Hurricane Activity

Preview these materials thoroughly. As with all these activities, before using this activity in class, review the sites and work through the activity yourself to learn about hurricanes so you can answer questions or direct the students to the answers.

The activity is set up so the students are taken to the pages that contain information that will be used to answer questions regarding hurricanes. The sites contain either the answers or the information from which the students can infer the answers. At the end of the activity, there is a list of enrichment activities and related web sites.

E. Select questions for students to answer.

It would be prudent for you to read the questions students will be expected to answer. These questions are in order of ascending difficulty. Depending on grade level and ability level, you might want to assign specific questions for your students.

F. Student Grouping

These activities can be done individually or in small groups of up to four students. They can also be done at home for extra credit by students who are on-line at home.

G. Software Requirements and Duplication Preparation

1. Download Real Player for your platform (Mac or PC) only if you wish to view the animations of hurricanes.
2. Download this instructor manual and the student activity book pages from the USA hurricane introductory page.
3. Duplicate and distribute student pages. Each student should have a copy of the student activity book. Ideally, the student activity book should be distributed and discussed the day before the activity.